NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE GENERAL SPECIFICATION

ROOF RUNOFF STRUCTURE

(No.)

CODE 558

SCOPE

This specification shall consist of furnishing and installing the specified gutters, downspouts, outlets and appurtenances for a roof runoff structure as shown on the plans. Construction and installation shall be conducted in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used.

All structures shall be constructed according to plans furnished by the Natural Resources Conservation Service (NRCS) and in accordance with the NRCS's engineering standards for these practices, as well as local building codes, state laws and regulations and current industry standards. Any deviation from the approved drawings and specifications must be approved by the engineer prior to construction.

PUBLIC AND PRIVATE UTILITIES

Utilities are defined to be public or private, overhead and underground power or communication lines, and any pipelines The landowner\operator\contractor shall conduct their own search and discovery for utilities in order to lessen or avoid potential damages, injuries or loss of life. During planning, the owner\operator should complete an OK-ENG-45 UTILITIES INVENTORY FORM to document known utilities in order to comply with State law prior to any ground disturbance and return it to a USDA-NRCS representative.

QUALITY CONTROL

Quality Control of all materials and construction procedures is the responsibility of the landowner and contractor. NRCS will make periodic review(s) of the work for the benefit of the agency which will include the final construction check.

ROOF GUTTER MATERIALS

All materials and construction shall be in accordance with applicable NRCS standards and construction specifications. Roof gutters and downspouts shall be of the materials, style, color and size as shown on the drawings. Roof gutters and downspouts will be the type and size specified on the drawings with the following properties:

Wood shall be clear and free of knots. Wood may be redwood, cedar, cypress, or other species that has the desired longevity.

Plastic shall contain ultraviolet stabilizers.

Aluminum shall have a nominal thickness of 0.027 inches for the gutters and 0.020 for the downspouts.

Steel shall be galvanized with a minimum thickness of 28 gauge.

All gutter and downspout joints shall be made water-tight by use of mastic or caulking. Dissimilar metals shall not be in contact with each other.

ROOF GUTTER MOUNTING

The existing roof system shall be in good condition and capable of supporting the anticipated loading, including loads form snow and ice. Rafters and fascia boards must be in good conditions in order to

properly hang and support the roof gutter. It is common for rafter ends to be damaged and fascia boards to be missing or damaged. Fascia boards that are damaged, rotten, and otherwise unstable or have a nominal thickness less than 2 inches shall be replaced prior to installation of a roof gutter system. Rafter ends must be repaired and fascia boards replaced as needed. When roofs are in poor conditions repairs shall be made before roof gutter are installed.

ROOF GUTTER SUPPORTS

Gutters shall be mounted with commercial hangers as recommended by the manufacturer. Unless otherwise shown on the drawings, gutter supports shall have a maximum spacing of 48 inches for galvanized steel and 32 inches for aluminum and plastic gutters. Wood gutters shall be mounted on fascia boards using furring blocks that are a maximum of 24 inches apart.

Downspouts shall be securely fastened at the top and bottom with intermediate supports at a maximum spacing of 10 feet. Lateral and/or diagonal downspouts shall have supports that are a maximum of 5 feet apart.

ROOF GUTTER INSTALLATION

Gutters shall be placed below the roof slope line so ice and snow can slide clear. Unless otherwise shown on the drawings, the top outer edge of the gutter shall be at least ½ inch below the projected roof slope line on roofs with pitches steeper than 5V:12H and at least ¾ inch below on roofs with pitches of 5V:12H or flatter. Unless otherwise shown on the drawings gutter slopes shall be a minimum of ¼ inch fall per 10 feet of length.

The gutter and downspouts shall be installed true and plumb. Temporary bracing shall be placed wherever necessary to resist all loads to which the materials may be subjected, including those applied by the installation and operation of equipment. Such bracing shall be left in place as long as may be necessary for safety. As erection progresses the work shall be securely attached to resist all loads and stresses.

ROOF GUTTER OUTLETS

Outlet facilities shall be installed as shown on the drawings. When downspouts empty onto the ground surface, there shall be an elbow to direct water away from the building and splash blocks or other protection as shown on the drawings shall be provided to prevent erosion.

GROUND GUTTER

When ground gutters are used to collect and convey roof runoff away from the foundation of the structure, provide a ground gutter with adequate provision to convey runoff away from the foundation of the structure, a rock filled trench with a subsurface drain, a concrete or rock lined channel, or a pre-cast channel to convey the roof runoff water to a stable discharge location or infiltration area may be used.

For all lined channels use Conservation Practice Standard (468), Lined Waterway or Outlet for construction and materials standards and specifications. Site specific drawings and specifications will be provided for this type of installation.

Specifications for ground gutters using a rock filled trench with a subsurface drain (drip trench) are as follows:

- Gravel material used to fill the drip trench shall be washed and free of fines. Only poorly graded rock (rock fragments approximately all the same size) shall be used. The gradation shall be as shown on the drawings. Pipe used as drains shall conform to the size and material specified on the drawings. All joints shall be secure and inspected prior to placing gravel material over pipe. No compaction of the gravel material shall be required.
- Top soil excavated from the site will be stockpiled for later placement around the completed structure. The completed excavation and placement of spoil material shall conform as nearly to lines, dimensions, grades, and slopes shown on plans or staked on the ground as skillful operation of the excavating equipment will permit. Generally, spoil will be placed and spread to blend with the existing terrain of the spoil area. Runoff from outside drainage areas will be diverted from the excavation area.

- The outlet(s) for the drip trench pipe shall be located to be free-flowing, protected from animal and equipment damage and shall have an animal guard of appropriate size and type installed. The outlet shall be located to minimize erosion and flooding. Upon completion of construction, all disturbed areas shall be graded to drain and seeded and mulched. Refer to *Oklahoma Plant Materials Technical Note OK-21* or equivalent for seeding and mulching requirements.